ANALYTICAL SUMMARY REPORT

January 08, 2018

Solvay Chemicals PO Box 1167 Green River, WY 82935-1167

Work Order: C17120696

Project Name: Submitted as Non-EPA/PWS 5600914P

Energy Laboratories, Inc. Casper WY received the following 1 sample for Solvay Chemicals on 12/28/2017 for analysis.

Lab ID	Client Sample ID	Collect Date Receive Date	Matrix	Test
C17120696-001	Entry Point	12/27/17 11:00 12/28/17	Drinking Water	Carbon, Total Organic Haloacetic Acid Liquid-Liquid Ext. (VOA) 552-Haloacetic Acids-(HAAs) 524-Purgeable Organics, Trihalomethanes

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

Billings, MT **800.735.4489** • Casper, WY **888.235.0515** Gillette, WY **866.686.7175** • Helena, MT **877.472.0711**

CLIENT: Solvay Chemicals

Project: Submitted as Non-EPA/PWS 5600914P Report Date: 01/08/18

Work Order: C17120696 CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Solvay Chemicals

 Project:
 Submitted as Non-EPA/PWS 5600914P
 Collection Date: 12/27/17 11:00

 Lab ID:
 C17120696-001
 DateReceived: 12/28/17

Lab ID: C17120696-001 **Client Sample ID:** Entry Point

Matrix: Drinking Water

Report Date: 01/08/18

					MCL/		
Analyses	Result	Units	Qualifiers	RL	QCL	Method	Analysis Date / By
NON-METALS							
Organic Carbon, Total (TOC)	ND	mg/L		0.5		A5310 C	12/29/17 16:15 / dmb
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Bromoform	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Chlorodibromomethane	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Chloroform	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Trihalomethanes, Total	ND	ug/L		0.50	80	E524.2	12/29/17 20:05 / dm
Surr: 1,2-Dichloroethane-d4	99.0	%REC		70-130		E524.2	12/29/17 20:05 / dm
Surr: p-Bromofluorobenzene	111	%REC		70-130		E524.2	12/29/17 20:05 / dm
Surr: Toluene-d8	106	%REC		70-130		E524.2	12/29/17 20:05 / dm
HALOACETIC ACIDS							
Dibromoacetic acid	ND	ug/L		0.25		E552.2	01/02/18 21:00 / eli-b
Dichloroacetic acid	ND	ug/L		0.75		E552.2	01/02/18 21:00 / eli-b
Monobromoacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Monochloroacetic acid	ND	ug/L		0.75		E552.2	01/02/18 21:00 / eli-b
Trichloroacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Total Regulated Haloacetic Acids	ND	ug/L		0.25	60	E552.2	01/02/18 21:00 / eli-b
Bromochloroacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Surr: 2,3-Dibromopropionic acid	82.0	%REC		70-130		E552.2	01/02/18 21:00 / eli-b

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

Prepared by Casper, WY Branch

Client:Solvay ChemicalsReport Date: 01/03/18Project:Submitted as Non-EPA/PWS 5600914PWork Order: C17120696

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A5310 C							А	nalytical R	un: TOC3-C	_171229A
Lab ID: CCV-9806	Cor	ntinuing Cal	ibration Verific	ation Standar	d				12/29/	/17 13:45
Organic Carbon, Total (TOC)		5.04	mg/L	0.50	101	90	110			
Method: A5310 C									Batch:	R230897
Lab ID: LCS-10002	Lab	oratory Cor	ntrol Sample			Run: TOC3	-C_171229A		12/29/	/17 13:01
Organic Carbon, Total (TOC)		4.89	mg/L	0.50	98	90	110			
Lab ID: MBLK	Me	thod Blank				Run: TOC3	-C_171229A		12/29	/17 13:30
Organic Carbon, Total (TOC)		0.1	mg/L	0.08						
Lab ID: C17120689-002BMS	Sar	mple Matrix	Spike			Run: TOC3	-C_171229A		12/29	/17 14:16
Organic Carbon, Total (TOC)		7.01	mg/L	0.50	101	85	115			
Lab ID: C17120689-002BMS	D Sar	mple Matrix	Spike Duplica	te		Run: TOC3	-C_171229A		12/29	/17 14:32
Organic Carbon, Total (TOC)		7.03	mg/L	0.50	102	85	115	0.2	20	

Prepared by Casper, WY Branch

Client:Solvay ChemicalsReport Date: 01/08/18Project:Submitted as Non-EPA/PWS 5600914PWork Order: C17120696

Qual	PD RPDLimit	gh Limit RPD	H	Low Limit	%REC	RL	Jnits	ılt	Result	Count		Analyte
R230899	Analytical Run:	А									E524.2	Method:
17 14:46	12/29/				d	Standar	ation Verificati	Calib	ntinuing Ca	8 Cor	29-Dec-17_CCV_3	Lab ID:
		130		70	101	0.50	ug/L	04	5.04		nloromethane	Bromodich
		130		70	85	0.50	ug/L	24	4.24		n	Bromoform
		130		70	91	0.50	ug/L	56	4.56		omomethane	Chlorodibre
		130		70	99	0.50	ug/L	96	4.96		n	Chloroform
		130		70	94	0.50	ug/L	3.8	18.8		thanes, Total	Trihalomet
		130		70	102	0.50					Bromofluorobenzene	Surr: p-l
		130		70	89	0.50					2-Dichloroethane-d4	Surr: 1,2
		130		70	109	0.50					oluene-d8	Surr: To
R230899	Batch:										E524.2	Method:
17 15:18	12/29/	1_171229A	VΟ	Run: 5975\			ol Sample	Cont	ooratory Co	8 Lab	29-Dec-17_LCS_4	Lab ID:
		130		70	102	0.50	ug/L	12	5.12		nloromethane	Bromodich
		130		70	103	0.50	ug/L	16	5.16		n	Bromoform
		130		70	99	0.50	ug/L	96	4.96		omomethane	Chlorodibre
		130		70	105	0.50	ug/L	24	5.24		n	Chloroform
		130		70	102	0.50	ug/L).5	20.5		thanes, Total	Trihalomet
		130		70	114	0.50					Bromofluorobenzene	Surr: p-l
		130		70	91	0.50					2-Dichloroethane-d4	Surr: 1,2
		130		70	106	0.50					oluene-d8	Surr: To
17 16:22	12/29/	1_171229A	νo	Run: 5975\				ank	thod Blank	8 Me	29-Dec-17_MBLK_6	Lab ID:
						0.50	ug/L	1D	ND		nloromethane	Bromodich
						0.50	ug/L	1D	ND		n	Bromoform
						0.50	ug/L	1D	ND		omomethane	Chlorodibre
						0.50	ug/L	1D	ND		n	Chloroform
						0.50	ug/L	1D	ND		thanes, Total	Trihalomet
		130		70	104	0.50					Bromofluorobenzene	Surr: p-E
		130		70	92	0.50					2-Dichloroethane-d4	Surr: 1,2
		130		70	106	0.50					oluene-d8	Surr: To

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Prepared by Billings, MT Branch

Client:Solvay ChemicalsReport Date:01/08/18Project:Submitted as Non-EPA/PWS 5600914PWork Order:C17120696

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD RPDLimit	Qual
Method:	E552.2							Analytical R	un: 117130
Lab ID:	CK5-117130	Continuing Ca	alibration Verif	ication Standa	rd			01/0)2/18 21:18
Dibromoace	etic acid	3.71	ug/L	0.25	93	70	130		
Dichloroace	etic acid	11.5	ug/L	0.75	96	70	130		
Monobromo	pacetic acid	7.91	ug/L	0.50	99	70	130		
Monochloro	pacetic acid	11.6	ug/L	0.75	97	70	130		
Trichloroac	etic acid	3.42	ug/L	0.50	86	70	130		
Bromochlor	roacetic acid	7.37	ug/L	0.50	92	70	130		
Total Regul	lated Haloacetic Acids	38.1	ug/L	0.25	95	70	130		
Surr: 2,3	-Dibromopropionic acid			1.2	100	70	130		
Method:	E552.2							Bat	ch: 117130
Lab ID:	CK3-117130	Continuing Ca	alibration Verif	ication Standa	rd	Run: EECI	D.I_180102A	01/0)2/18 18:02
Dibromoace	etic acid	0.785	ug/L	0.25	79	70	130		
Dichloroace	etic acid	2.95	ug/L	0.75	98	70	130		
Monobromo	pacetic acid	2.02	ug/L	0.50	101	70	130		
Monochloro	pacetic acid	2.94	ug/L	0.75	98	70	130		
Trichloroac	etic acid	0.817	ug/L	0.50	82	70	130		
Bromochlor	roacetic acid	1.58	ug/L	0.50	79	70	130		
Total Regul	lated Haloacetic Acids	9.51	ug/L	0.25	95	70	130		
Surr: 2,3	-Dibromopropionic acid			1.2	80	70	130		
Lab ID:	MB1-117130	Method Blank				Run: EECI	D.I_180102A	01/0)2/18 18:20
Dibromoace	etic acid	ND	ug/L	0.25					
Dichloroace	etic acid	ND	ug/L	0.75					
Monobromo	pacetic acid	ND	ug/L	0.50					
Monochloro	pacetic acid	ND	ug/L	0.75					
Trichloroac	etic acid	ND	ug/L	0.50					
Bromochlor	roacetic acid	ND	ug/L	0.50					
Total Regul	lated Haloacetic Acids	ND	ug/L	0.25					
Surr: 2,3	-Dibromopropionic acid			1.2	71	70	130		
Lab ID:	LCS-117130	Laboratory Co	ontrol Sample			Run: EECI	D.I_180102A	01/0)2/18 19:14
Dibromoace	etic acid	3.79	ug/L	0.25	95	70	130		
Dichloroace	etic acid	11.5	ug/L	0.75	96	70	130		
Monobromo	pacetic acid	7.85	ug/L	0.50	98	70	130		
Monochloro	pacetic acid	11.0	ug/L	0.75	92	70	130		
Trichloroac	etic acid	3.40	ug/L	0.50	85	70	130		
Bromochlor	roacetic acid	7.33	ug/L	0.50	92	70	130		
Total Regul	lated Haloacetic Acids	37.5	ug/L	0.25	94	70	130		
Surr: 2,3	-Dibromopropionic acid			1.2	77	70	130		
Lab ID:	B17122105-001BMS	Sample Matrix	c Spike			Run: EECI	D.I_180102A	01/0)2/18 20:07
Dibromoace	etic acid	3.81	ug/L	0.25	95	70	130		
	etic acid	18.4	ug/L	0.75	102	70	130		

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



Prepared by Billings, MT Branch

Client:Solvay ChemicalsReport Date:01/08/18Project:Submitted as Non-EPA/PWS 5600914PWork Order:C17120696

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E552.2								Batc	h: 117130
Lab ID:	B17122105-001BMS	Sample Matrix	k Spike			Run: EEC	D.I_180102A		01/02	2/18 20:07
Monobrom	oacetic acid	9.72	ug/L	0.50	122	70	130			
Monochloro	pacetic acid	13.1	ug/L	0.75	109	70	130			
Bromochlo	roacetic acid	9.58	ug/L	0.50	103	70	130			
Total Regu	lated Haloacetic Acids	55.2	ug/L	0.25	106	70	130			
Surr: 2,3	B-Dibromopropionic acid			1.2	74	70	130			
Lab ID:	B17122106-001BDUP	Sample Duplic	cate			Run: EECI	D.I_180102A		01/02	2/18 20:42
Dibromoac	etic acid	2.37	ug/L	0.25				5.7	40	
Dichloroac	etic acid	3.46	ug/L	0.75				1.4	40	
Monobrom	oacetic acid	ND	ug/L	0.50					40	
Monochlor	pacetic acid	ND	ug/L	0.75					40	
Trichloroad	etic acid	1.92	ug/L	0.50				2.1	40	
Bromochlo	roacetic acid	3.38	ug/L	0.50				1.2	40	
Total Regu	lated Haloacetic Acids	7.75	ug/L	0.25				1.9	40	
Surr: 2,3	B-Dibromopropionic acid		-	1.2	73	70	130			
Lab ID:	B17122105-001BMS	Sample Matrix	k Spike			Run: EECI	D.I_180102A		01/02	2/18 22:29
Trichloroad	etic acid	10.1	ug/L	2.5	89	70	130			

RL - Analyte reporting limit.

Work Order Receipt Checklist

Solvay Chemicals

C17120696

Standard Reporti	na Procedures:			
Water - pH acceptable upon	receipt?	Yes 🗹	No 🗌	Not Applicable
Water - VOA vials have zero	headspace?	Yes 🔽	No 🗌	No VOA vials submitted
Container/Temp Blank tempe	erature:	0.7°C On Ice		
Temp Blank received in all si	hipping container(s)/cooler(s)?	Yes 🗸	No 🗌	Not Applicable
All samples received within h (Exclude analyses that are of such as pH, DO, Res Cl, Su	onsidered field parameters	Yes ✓	No 🗌	
Sufficient sample volume for	indicated test?	Yes ✓	No 🗌	
Sample containers intact?		Yes ✓	No 🗌	
Samples in proper container	/bottle?	Yes ✓	No 🗌	
Chain of custody agrees with	n sample labels?	Yes ✓	No 🗌	
Chain of custody signed whe	en relinquished and received?	Yes ✓	No 🗌	
Chain of custody present?		Yes √	No 🗌	
Custody seals intact on all sa	ample bottles?	Yes	No 🗌	Not Present ✓
Custody seals intact on all sl	nipping container(s)/cooler(s)?	Yes ✓	No 🗌	Not Present
Shipping container/cooler in	good condition?	Yes 🔽	No 🗌	Not Present
Reviewed Date:	12/29/2017		Carı	rier name: NDA
Reviewed by:	Kasey Vidick		Red	ceived by: dcq
Login completed by:	Dorian Quis		Date I	Received: 12/28/2017

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None



Chain of Custody & Analytical Request Record

Account Information (Billing information)	nformation)		œ	eport Infor	mation (# o	ifferent than ,	Report Information (if different than Account Information)		Comments	ıts	
Contact KOUN! HOPKINSON Contact KOUN! HOPKINSON Phone 307-812-(661) Mailing Address CN 5208 City, State, Zip Prince ton NT 08540 Email HN-Shaved, Sarvices-SITESOLUOU Receive Invoice Thard Copy MEmail Receive Report Thard Copy Purchage Order 3 Guote 6	Va Repo	18, INC. 08540 ITESOLVOU, CON eport alra Copy REmail Bottle Order \$1396		Company/Name SOLUDU Chrewich. Contact Cluishin Deavy Phone 307 - 812 - 6571 Malling Address 400 County Rol City, State, Zip Creen River, (U) Email Chrishin, Clean Ever, (U) Receive Report Chard Copy (Remail Special Report Commiss: Clean Contact Indianal Company/Name Copy (Remail Copy Contact Indonstroy)	ame Soludu Juisha D OT-812- OT-812- ISS 400 C ISP 61667 ISPAN ORG INTERMATION INTERMATIO	Deav 2-6571 County Rd N River, W Span Solvay py Kemail	85 82 82 000 000 000 000 000 000 000 000 0	-7vc.			
4513040819		,]]								_
Project Information				Matrix Codes			Analysis Kequested	red		All furnaround times are	_
Project Name, PWSID, Permit, etc. PWS# 56 009 14 P	24 SG 009	스타		W- Water						standard unless marked as RUSH.	
Sampler Name Chilisho, Dagy	Sampler Phone 307-872-6571	307-872-COE	1150	S - Solids V - Vegetation			-			Energy Laboratories	
Sample Origin State (1)	EPA/State Compliance	Niance Yes	o N E	B - Bioassay					pəu	RUSH sample submittal for	
ate san efined,	nple type. all before sending. ☐ Unprocessed ore (NOT ground or refined)*	ground or refine	, (0	O - Other DW - Drinking Water	S¥	HW C			lostiA	charges and scheduling – See Instructions Page	
entif	tion	Collection		Number of Matrix Containers (See Codes	₩ H	0T TT				RUSH LANGER OF THE TARK THE ONLY	93/FI
(Name, Location, Interval, etc.)		1	3	1		7					\neg
-				دے	3 2				_	5 17 13 069G	$\neg \top$
ENT		12-27-17 11:10/AVM		~	> 4						\neg
					•						\top
2											\neg
9		•									\top
											$\neg \vdash$
8						_					\top
6											1
10					_						٦ [
Custody Relinquished by (print)		Date/Time 12.	Sign Sign Control	10 ou	Door	Received by (print)	print)	Date/Time		Signature	
be signed Relinquished by (print)			Signature			Received by	Received by Laboratory (print)	138[C]	1053	Spinor Cylina	\neg
19 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	The second secon			LABOR	LABORATORY USE ONLY	ONLY				namper (cash/chack only)	
Shipped By Cooler ID(s)	Custody Seals Y N C B	- Intact	Receipt Temp °C	Temp Blank Y N	on Ce	22	Payment Type Cash Check	Amount \$	78C	לן וארווותמי להפסילינינסטי ביייני	
											ĺ

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Page 9 of 12



ENERGY LABORATORIES INC P.O. Box 247 CASPER WY 82602-0247

307-235-0515 307-234-1639 (US) 2115204 Your tel Your fax

Your vendor number

Purchase order

Our reference 4512818043-4291-KH

Please mention with any correspondence and on invoice Contact person/telephone/email

Kami Hopkinson 307-872-6671 KAMI.HOPKINSON@SOLVAY.COM

307-872-5863

Please deliver to: SOLVAY SODA ASH JOINT VENTURE O.DEAN;; 400 COUNTY ROAD 85 GREEN RIVER WY 82935

: 05/01/2017 Valid to : 02/01/2017 Delivery date

Please email or send your invoice to:
Email: HN-Shared.Services-SIT@solvay.com
SOLVAY SODA ASH JOINT VENTURE
CN 5208, Princeton
NJ 08540, United States

Vendor invoice inquiry:

http://www.solvay.com/en/about-solvay/procurement/invoicing/index.html E-Mail: ptp-accounts.payable@solvay.com Phone: 877-463-7645 Supplier Hotline

WYOMING DIRECT PAY PERMIT 27-0-00010

: FOB SHIPPING POINT

Payment terms: 30 D end of month from invoice date the 5th



ENERGY LABORATORIES INC P.O. Box 247 CASPER WY 82602-0247

PRINTED THE SECOND OF THE PROPERTY OF

Our reference 4513028810-4291-KH

Please mention with any correspondence and on invoice

Contact person/telephone/email HOPKINSON K 307-872-6671 KAMI.HOPKINSON@SOLVAY.COM

307-872-5863

Your tel Your fax 307-235-0515 307-234-1639 (US)

Your vendor number

2115204

Please deliver to:

SOLVAY SODA ASH JOINT VENTURE 400 COUNTY ROAD 85 82935 GREEN RIVER WY

Valid to

Delivery date

: 02/28/2018 : 12/08/2017

Please email or send your invoice to: Email: accountspayable.na-us@solvay.com SOLVAY SODA ASH JOINT VENTURE

Vendor Invoice Inquiry:

Internet: http://www.solvay.com/en/about-solvay/procurement/invoicing/index.html E-Mail: ptp-accounts.payable@solvay.com Phone: 877-463-7645 Supplier Hotline

WYOMING DIRECT PAY PERMIT 27-0-00010

Incoterms

: FOB SHIPPING POINT

Payment terms : 60 D from invoice date

The Purchase Order Number indicated in the upper right hand corner of this document must be included on all shipments, invoices, and other documentation. Your packing list, shipping papers, or bill of lading must reference our Purchase Order Number and our Line Number.

Any material received without this information is subject to refusal at our dock. Your invoice must reference our Purchase Order number and our line item number. In the event they do not, they will be returned for correction and resubmittal and processed for payment based on the resubmitted date.

A copy of the freight bill is required if freight is charged on the invoice



SHIPPED TO: Solvay Chemicals

Trust our People. Trust our Data.

BOTTLE ORDER 51396



Billings, MT 808.735.4489 • Casper, WY 888.235.0515 Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

Contact: Ouisha Dean							Order Created by: Kathy Hamre	
400 County Rd 85							Shipped From: Casper, WY	
Green River WY 82935	82935						Ship Date: 2/10/2017	
Phone: (307) 872-6571							VIA: Ground	
Project:								
Bottle Size/Type	Bottles Per Samp	Method	Tests	J	Critical Hold Time	Preservative	Notes	Num of Samp
				:				
40 mL Amber Glass VOA	3	3 A5310 C	Carbon, Total Organic			☐ H3PO4		7
HNO3 - Nitric Acid	Ξ □	H2SO4 - Sulfuric Acid	iric Acid NaOH - Sodium Hydroxide	fium Hydroxide		We strongly	We strongly suggest that the samples are	
ZnAc - Zinc Acetate	∓ ₹	HCI - Hydrochloric Acid		H3PO4 - Phosphoric Acid	.,	shipped the s	shipped the same day as they are collected.	
Material Safety Data Sh	ets(MS	SDS) Availat	Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets	ervices -> MSD(S Sheet	S		
Corrosive Chemicals: Nitric, S.	Jfuric, Ph	osphoric, Hydr	Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.	xide. Zinc Acetate	is a skin i	irritant.		
Subcontracting of sample analyses to an outside laboratory is aboratories will be indicated within the Laboratory Analytical	es to an o in the Lab	utside laboratory oratory Analytic		boratories will utilize i	its branch	laboratories or quali	nay be required. If so, Energy Laboratories wilt utilize its branch laboratories or qualified contract laboratories for this service. Any such Report.	